

39. ZOOLOGICAL RESULTS OF THE PERCY SLADEN TRUST EXPEDITION TO YUNNAN, UNDER THE LEADERSHIP OF PROFESSOR J. W. GREGORY, F.R.S. (1922).

AMPHIPOD CRUSTACEA.

By W. M. TATTERSALL, D.Sc., *Professor of Zoology, University College, Cardiff.*

The collection of Amphipods made by Professor J. W. Gregory during his recent visit to Yunnan, and entrusted to me for examination by Dr. S. W. Kemp, is a small one, consisting of three tubes of material collected in the following localities :—

1 tube labelled C. 5.

June 15th, 1922. The Li-Kiang snow peak, on the eastern flank of the mountain, one day's march north of the city of Li-Kiang-fu, Yunnan.

1 tube labelled C. 10.

June 30th, 1922. Stream at Yei-chih, altitude 6,400 feet, on the terrace beside the Mekong River. Stream fairly swift, flowing over a large delta fan; it had come from some high mountains and was then spreading out over the slope of the gravels on its way down to the Mekong.

1 tube labelled C. 23.

August 25th, 1922. Pool at Lang-sui-chang, half-way between Pupiao and Yung-Chang in Yunnan, altitude 5,500 feet. Yung-Chang is in south-west China, on the road from Bhamo on the Upper Irrawadi to Tali-fu on lake Tali in Yunnan.

The collection contained two species of the genus *Gammarus*, one, *G. annandalei*, recently described by me from the eastern part of China and Japan, and the other, apparently undescribed which I have pleasure in naming after its discoverer.

Family GAMMARIDAE.

Genus *Gammarus* Fabricius.

Gammarus annandalei Tattersall.

G. annandalei, Tattersall, *Mem. Asiatic Soc. Bengal*, VI, pp. 435-459, Plates XVIII-XXI, 1922.

Occurrence.—C. 23, two males, one female and one immature.

Remarks.—These specimens are in substantial agreement with those described by me from Japan and the eastern part of China in the essential form and structure of the appendages and especially in having accessory vesicles on the branchial lamellae. They vary from the typical form in the spinulation of the segments of the pleon. There are no spinules on the first three somites, two spinules on the fourth, two on the fifth and, in the female specimen, one spinule on the sixth somite; in the other specimens this somite is without spinules. Thus these specimens have fewer spinules on the pleon than those from Japan. The telson has a single spine at the apex of each lobe and one on each lateral margin. There are practically no setae or only a very few short ones on the third uropod. These small variations come well within the range of that known for other species of the genus.

It is a matter of some interest to find this species at the other side of China from the localities at which it was first discovered. China has not been extensively explored and future work will probably show that this Gammarid is widely distributed in the rivers and streams of the Chinese Empire.

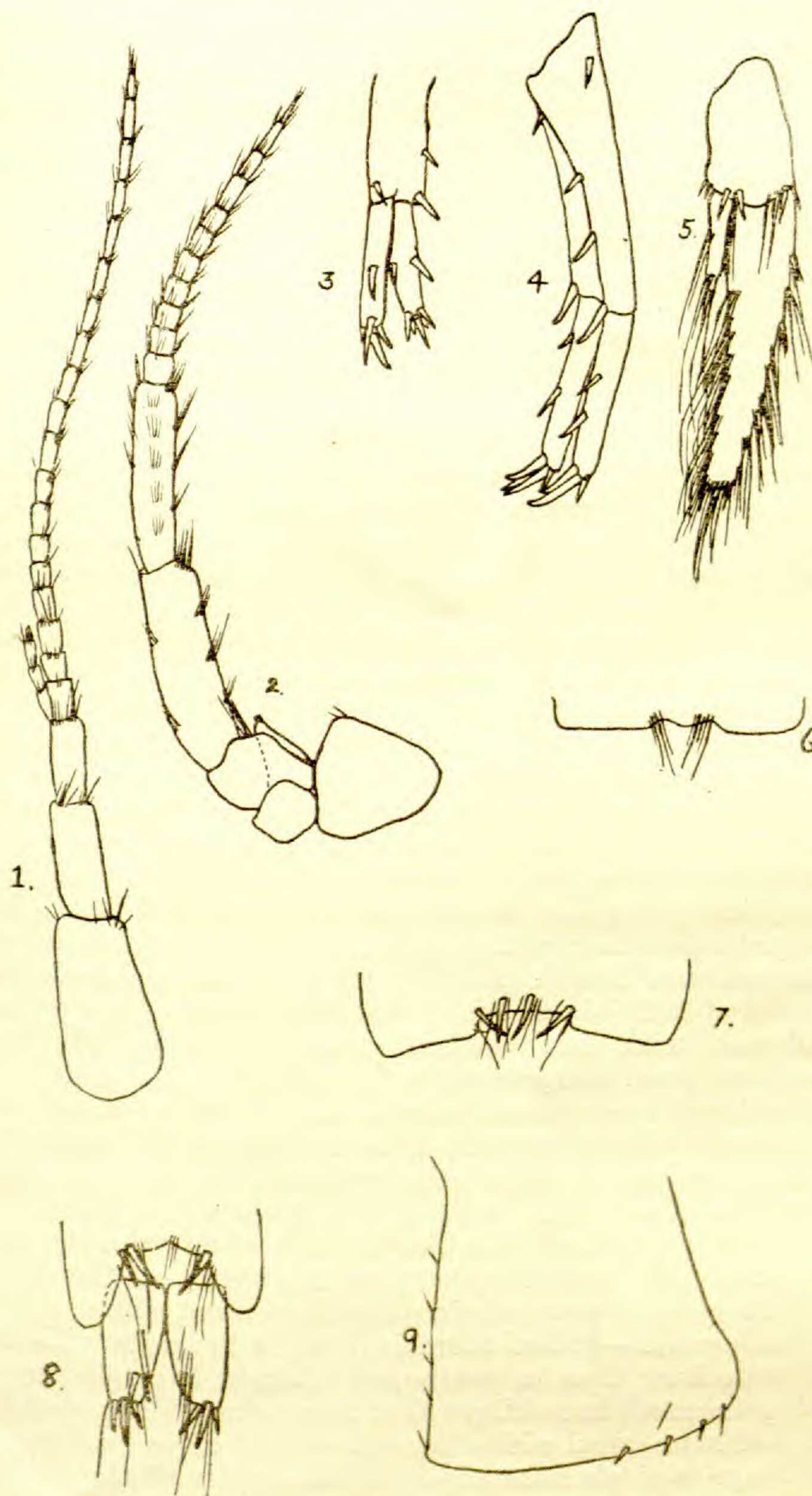
***Gammarus gregoryi*, sp. nov.**

Head.—Shorter than the combined length of the first two free thoracic somites measured in the mid-dorsal line; lateral lobes obliquely truncate with both upper and lower angles rounded; sinus somewhat deep; lower lateral angle acute.

Eyes.—Small, reniform in shape, situated equidistantly between the dorsal margin of the head and the lower margin of the lateral lobe of the head and not more than one-third of the length between these two points; no outer row of colourless ommatidia.

Side plates.—1-4, deeper than the corresponding somites; first three rhomboidal in shape with the lower (distal) angles rounded; the first plate with two small notches for the articulation of minute spinules at each of the anterior and posterior angles, the second plate with one anterior and three posterior notches, the third plate with two anterior and one posterior notch of the same kind; fourth side plate as broad as deep, posterior expansion short with the hind margin straight and bearing about six minute spinules in notches; two similar spinules are present on the lower anterior angle of the fourth side plate.

Pleon.—With the posterior-lateral corner of the third somite hardly produced at all and bluntly pointed with five or six spinules in notches on the hind margin and four on the anterior half of the lower margin; postero-dorsal portion of the fourth somite *without* spines but with a group of four rather long delicate setae on each side of the mid-dorsal line;



Gammarus gregoryi, sp. nov. (Male).

1. First antenna. 2. Second antenna. 3. Second uropod. 4. First uropod. 5. Third uropod. 6. Posterior margin of the fourth pleon somite. 7. Posterior margin of the fifth pleon somite. 8. Posterior margin of the sixth pleon somite, and telson. 9. Postero-lateral angle of the third pleon somite. All $\times 25$.

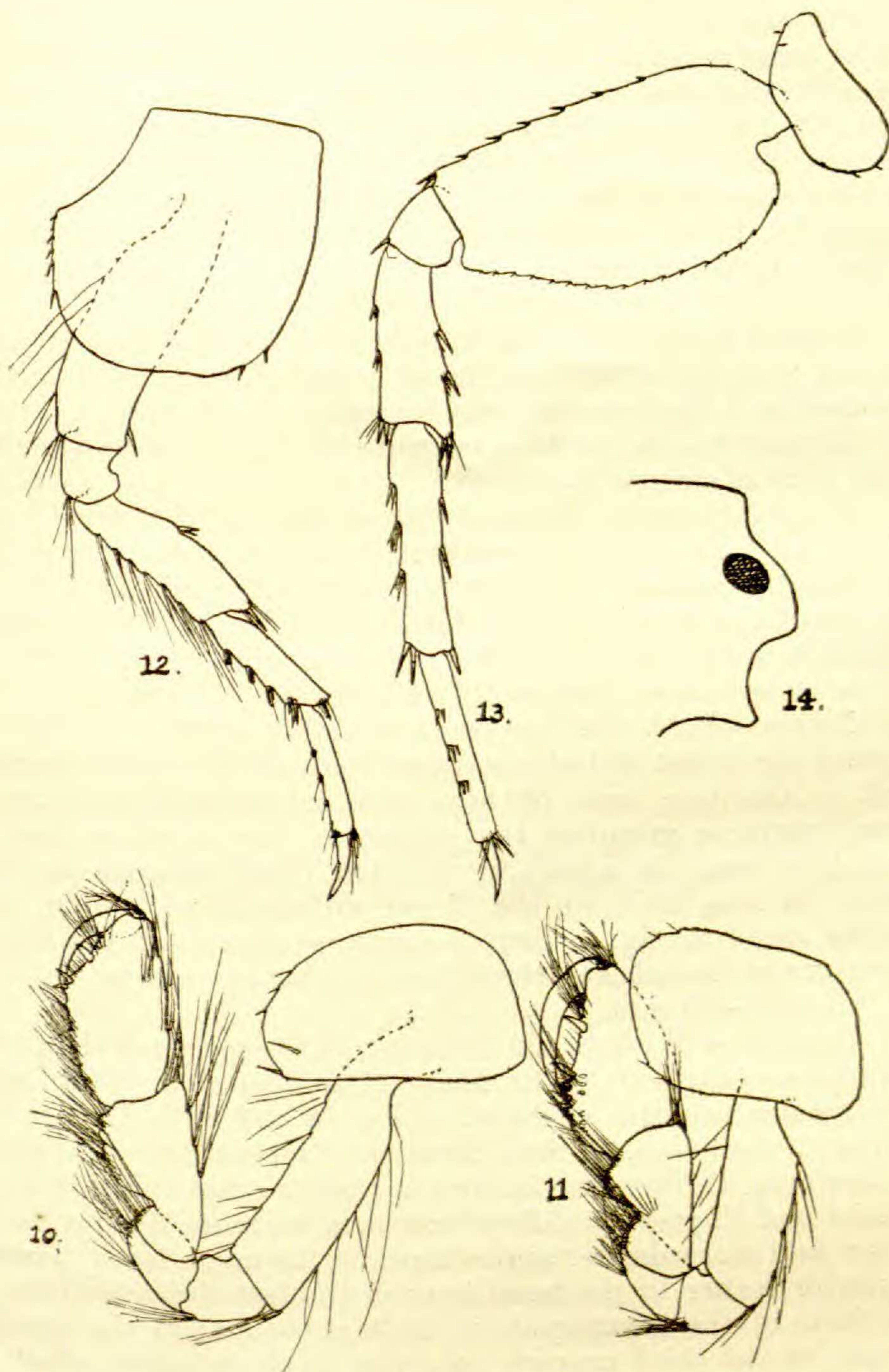
fifth somite with four spines and a similar number of groups of long setae equidistantly placed on the centre of the posterior dorsal margin, two on each side of the mid-dorsal line; sixth somite with one group of two spines and two groups of fine long setae on each side of the mid-dorsal point of the posterior margin. The arrangement of the spines and setae on the fourth to the sixth somites of the pleon outlined above seems to be the typical one but there is some variation and even asymmetry (see fig. 8) in the number and position. I have, however, failed to detect a single specimen with spines on the fourth somite.

Antenna 1.—Not half as long as the body and not differing appreciably in the sexes either as to length or adornment of setae; longer than antenna 2; peduncle extending only slightly beyond the distal end of the fourth joint of the peduncle of antenna 2, first joint about equal to, if anything slightly less than, the combined lengths of the second and third joints; primary flagellum consisting of about 19–21 joints; accessory flagellum of three or four joints (in the latter case the fourth joint is very small) and equal in length to the first three or four joints of the primary flagellum; whole appendage but sparingly furnished with a few short setae and without clusters of long setae on the lower margin of the joints of the peduncle.

Antenna 2.—Shorter than antenna 1, peduncle extending to about the level of the distal end of the third or fourth joint of the primary flagellum of antenna 2; fourth and fifth joints of the peduncle subequal in length; flagellum equal in length to the combined fourth and fifth joints of the peduncle and composed of 9–11 joints; fourth and fifth joints of the peduncle adorned with four or five groups of moderately long setae on the lower margins and a few calceoli in the male.

Gnathopod 1.—(Second thoracic limb) in the male with the hand robust, wider proximally than distally, about one and a half times as long as wide, palm very oblique, with a single strong spine about the centre of the palmar margin and a group of nine spines, one of which is much larger than the rest, upon which the tip of the dactylus impinges; on the inside face of the palm is a row of six quite short stout spines.

Gnathopod 2.—(Third thoracic limb) in the male with the hand less robust than in gnathopod 1, about twice as long as broad, palm much less oblique than in gnathopod 1 so that the hand is of more equal width throughout and more quadrangular in shape, a single strong spine in the centre of the palmar margin and two spines at the point of impact of the dactylus. In both gnathopods the merus, carpus and propodus are liberally supplied with groups of long setae. In the female the gnathopods are smaller and less robust than in the male but have a very similar shape and armature except that the spine on the middle of the palmar margin is absent in both cases.



Gammarus gregoryi, sp. nov.

10. Third thoracic limb of the male. 11. Second thoracic limb of the male. 12. Fifth thoracic limb. 13. Eighth thoracic limb. 14. Outline of the front of the head and eyes. All $\times 18$.

Peraeopods 1 and 2.—(Fourth and fifth thoracic limbs) are characterised by a development of very long setae on the lower margin of the merus, particularly in peraeopod 1.

Peraeopods 3-5 —(Sixth to eighth thoracic limbs) with the second joint expanded and the lower corner of the hind margin free and somewhat produced in all three; in peraeopods 4 and 5 this joint is longer than in peraeopod 3 and slightly narrowed distally; hind margin of this joint finely serrate. Six pairs of simple pedunculate branchial lamellae attached to the third to the eighth thoracic limbs and in the female four pairs of incubatory lamellae attached to the third to the sixth thoracic limbs.

Uropod 1.—Longer than uropod 2, in natural position extending slightly beyond the basal joint of the third uropod the details of the armature can be seen from fig. 4.

Uropod 2.—In position extends to the distal end of the basal joint of uropod 3.

Uropod 3.—With the inner branch one-third of the length of the first joint of the outer branch and in position extending slightly beyond the apices of the lobes of the telson; terminal joint of the outer branch small but distinct; outer branch in both sexes provided with numerous long setae on the inner and outer margins in addition to the usual spines.

Telson.—With the apices of its lobes extending slightly beyond the distal end of the basal joint of the third uropod, cleft to the base, apex of each lobe armed with a group of three spines; a group of two spines on the dorsal surface of each lobe near the apex; in addition there are one or two groups of long hairs on the dorsal surface of each lobe. As will be seen from fig. 8, there is some asymmetry in the dorsal armature of the lobes of the telson in some specimens.

Length.—10 mm.

Remarks.—With the aid of the key to the species of the genus *Gammarus* provided by Stebbing (Das Tierreich, 1906), this new species becomes excluded under 14 and finds its nearest ally in *G. crassus* G. O. Sars, from the Caspian Sea. *G. crassus* is, however, as its name implies, a more robust clumsily built species and *G. gregoryi* differs from it in its more slender build, longer and more slender appendages, in the much less produced posterior corner to the basal joint of the last thoracic limb, in the form of the gnathopods in both sexes and in the greater length of the third uropod. *G. gregoryi* shows some affinities with *G. pungens* M.-Edw., but differs in the form of the postero-lateral corner of the third somite of the pleon, which in *G. pungens* is more or less acutely produced, in the armature of the fourth to the sixth somites of the pleon, somewhat shorter antennae and in the different shape of the basal joint of the fifth peraeopod, which in *G. pungens* is narrower and without a produced posterior corner.

From the other species present in this collection and the only other of the genus known from China, *G. gregoryi* differs in the following points:—(1) it has no accessory vesicles on the branchial lamellae; (2) the first gnathopods are more robust, especially in the male, with a much more oblique palmar margin to the hand having a prominent spine at the centre and a group of spines where the apex of the nail impinges. In *G. annandalei* the hand of the first gnathopods is more quadrangular in shape, the palmar margin less oblique and without a large spine at its centre but armed with a row of peculiar blunt striated spines; (3) in the form of the second gnathopods in both sexes; (4) in the armature of the somites of the pleon, especially in being without spinules on the fourth somite; (5) in the different shape of the postero-lateral angle of the third somite of the pleon—in *G. annandalei* this angle is acutely produced. (6) In the general proportions of the uropods and telson. In *G. annandalei* the first and second uropods in their natural position extend at least half way and the first sometimes much further, along the first joint of the outer branch of the third uropod. (7) In the presence of long setae on the third uropods and in the minute size of the second joint of the outer branch of these appendages. In *G. annandalei* the third uropods are practically devoid of long setae except in the adult males from one or two localities, and the second joint of the outer branch is about one-sixth to one-fifth of the length of the first.

Occurrence	{	C. 10, about thirty specimens (<i>types</i>).
	{	C. 5, one damaged specimen.